



# Sun's Eco Responsibility Initiative

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# Eco



# Innovation

# Datacenter GHG Emissions

## Sun's Datacenter in Colorado

- 2006
- 10.5M kWh
- 10K tons of CO<sub>2</sub>

## All Datacenters Worldwide

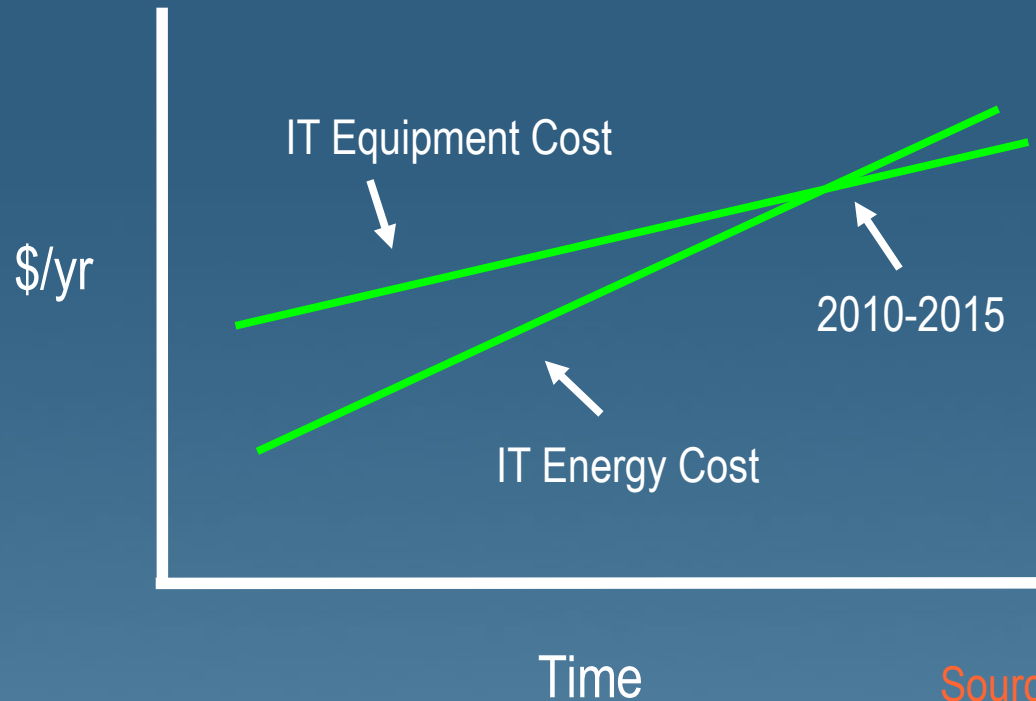
- 2006
- 290B kWh
- 200M tons of CO<sub>2</sub>

# Is Computing Sustainable?

Three reasons to say “No” today

- > Natural resources to build the stuff
- > Power consumption to run it
- > eWaste when we dispose of it

# Economic Impact



Increasing power density is shifting the balance of cost

# Sun's Comprehensive Eco Initiative



## INNOVATE

Eco Friendly  
Products and  
Services



## ACT

Environmentally  
Conscious  
Operations

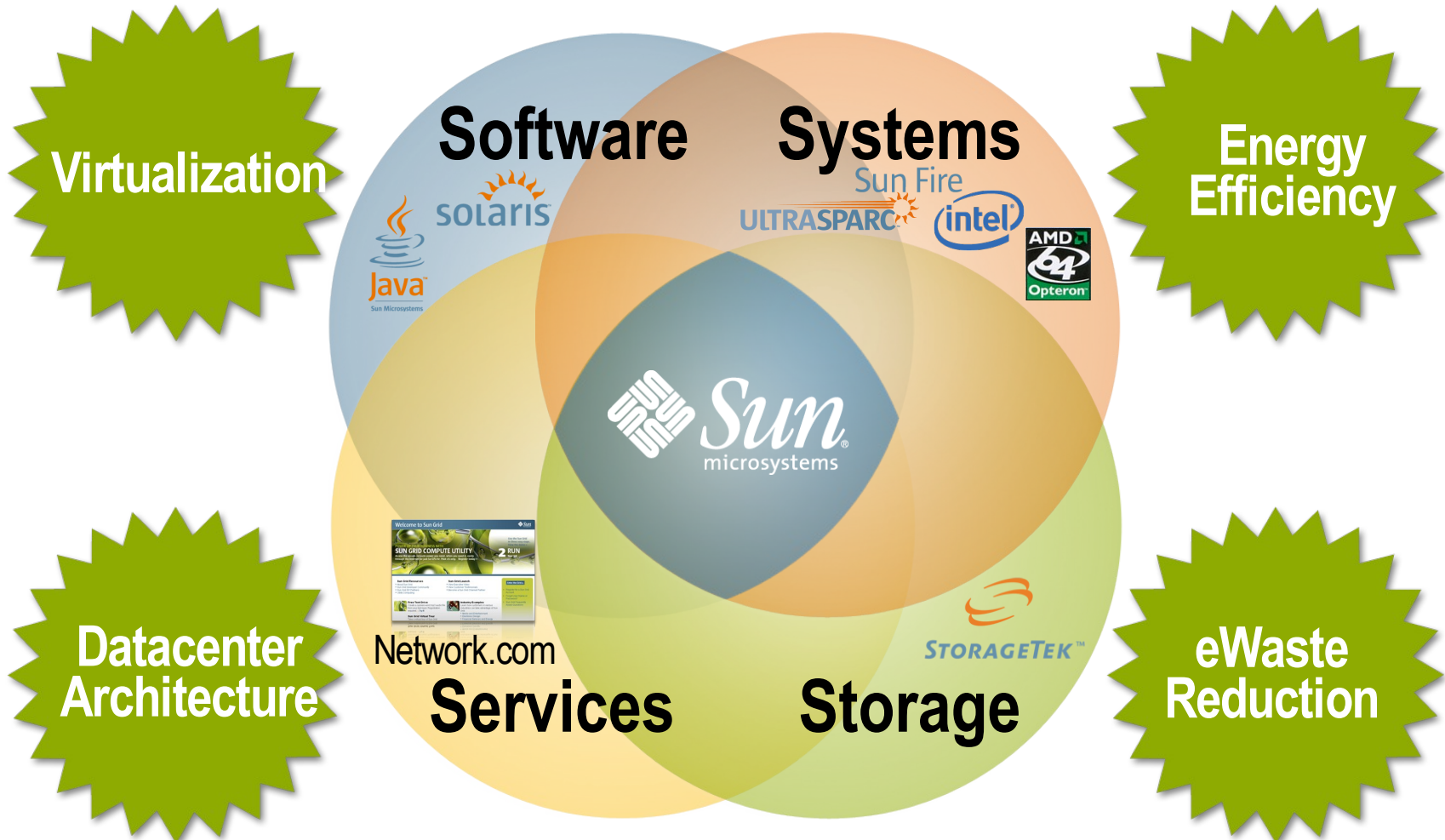


## SHARE

Applying  
Transparency  
and Open Source  
to Environmental  
Challenges



# Eco Leadership Through Innovation



# Innovate: Sun's Eco Servers

Sun Fire T1000



- 2X the performance
- 1/3 the power consumption
- 1/2 the space
- Qualifies for PG&E energy rebate program



CMT



The Power of 32 Servers  
9600watts

Replaced  
with 7 servers  
using 1900 watts



# SunRay Thin Clients

- Desktop runs on shared server
  - > Gets PC out of the office
- Operational carbon savings
  - > Uses only 4 watts
- Potential for huge carbon savings by avoiding the PC upgrade cycle and associated manufacturing impact



•SunRay 2

# Break Out Innovation



# Act: Greening Sun's Operations

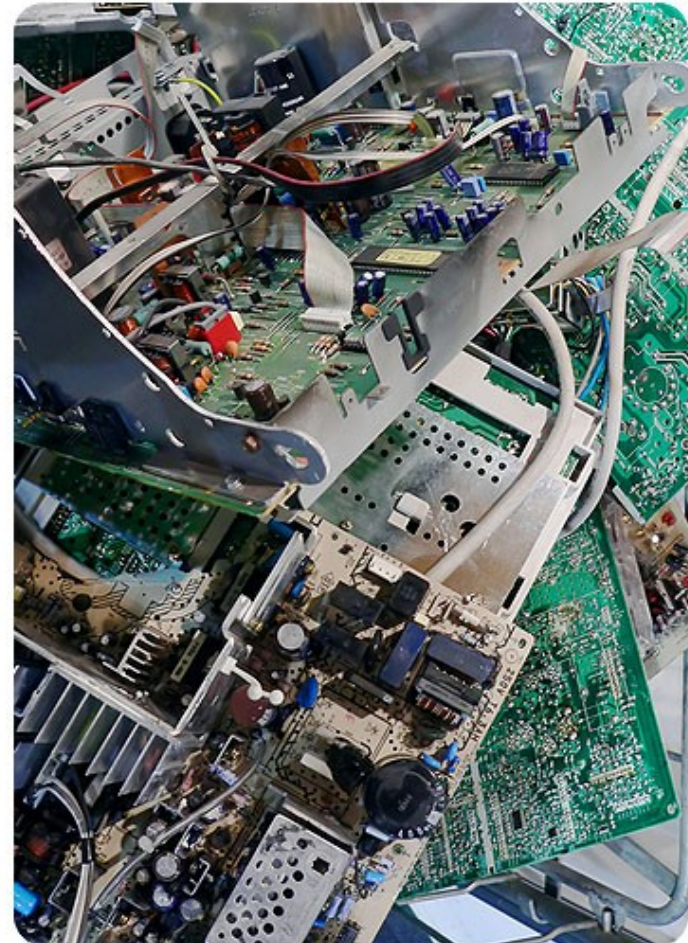
- Public goal with EPA Climate Leaders: 20% reduction in CO<sub>2</sub> from 2002 levels by 2012
- Programs
  - > Product stewardship
  - > OpenWork
  - > More efficient datacenters
  - > Greener buildings



# eWaste Leadership

- > 50% enters remanufacturing
- All metal and plastic recovered
- Less than 5% enters waste stream
- Fully RoHS compliant
- Ready for next regs

European WEEE Directive  
sets target that 65% of IT equipment must  
be recycled\*



\*(EC Directive on Waste Electrical and Electronic Equipment (WEEE) and EC Directive on the restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS))

# Eco = Ecology + Economics

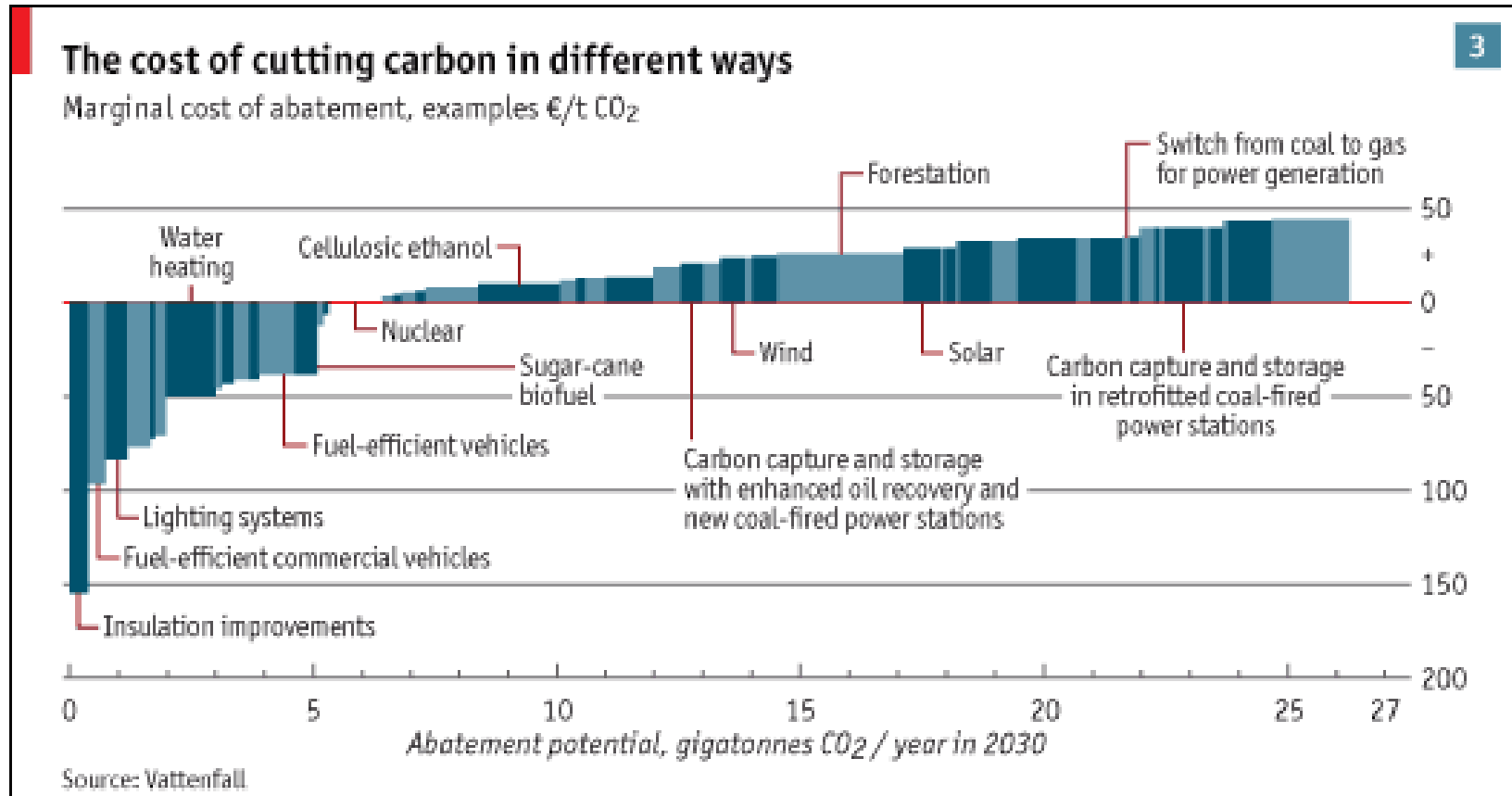
Sun Innovation	CO2 (tons)	Financial (\$)
OpenWork	~30,000	60 Million
Broomfield, CO datacenter	~630	100 Thousand
SunFire T1000/T2000 (Niagara)	~225,000	Over 300 Million
Eco Impact	Sun saves over 250,000 tons of CO2	Sun grows top line, drives out costs

# Our Carbon Footprint

- Carbon emissions calculated for US operations (~255K metric tons in 2006)
- Globalizing our carbon inventory
  - > Goal: Worldwide carbon total for CY 2007
- Three part strategy for reducing carbon
  - > Invest in energy efficiency
    - > 90% of emissions are from electricity use
  - > Invest in renewables
  - > Distant third: consider offsets for specific activities



# The Cost of Carbon Reduction



Source: Economist.com – May 31, 2007

# Sun's Open Work Program for Employees

- > A Global, Location-Independent Program Providing Technologies, Workspaces, and Best Practices
- > 2005 EPA Award: 4<sup>th</sup> in Nation for Commuter Friendliness

## PARTICIPATION

### Flex Location Workers

Over 18,000 participants  
Over 55% of Work Force

### Flexible Offices

127 Locations Worldwide

## BENEFITS

### Real Estate

6,600 Seats Saved/Avoided  
in FY06 = \$63.9M

Sun Ray - thin clients  
Over \$24M Saved Annually  
No-Cost Moves & Energy Savings

### Carbon Reduction

30,000 tons/year and growing

# Green Datacenters

- Leading by example
- System upgrades and consolidation
- Advanced cooling
- Eco-conscious site selection
- Green energy options
  - > Primary power
  - > Backup generation



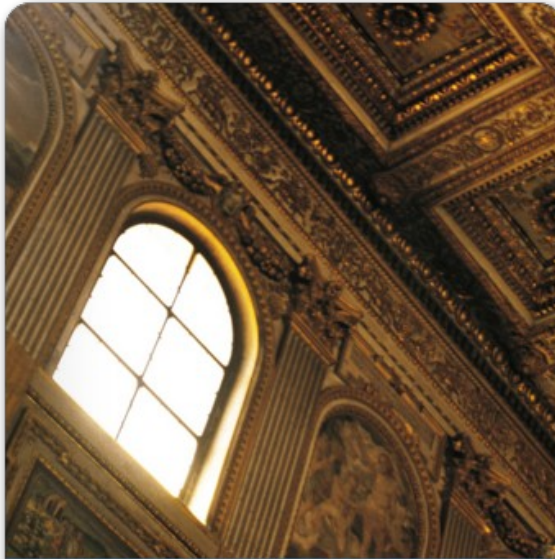
# Ecology Cannot Be Proprietary

- Public commitments
  - > EPA Climate Leaders
  - > 20% CO2 reduction by 2012, stretch goal of 2008
- Work on standards
  - > EPA, SPEC, etc.
  - > Green Grid
- Transparency and sharing
  - > Per building and per datacenter energy use on [www.sun.com](http://www.sun.com)
  - > Applying open source tools to environmental challenges

# Why Sun's Eco Effort is Different



Comprehensive



Investing in  
Innovation



Open



Saving energy  
and reducing waste  
is not just good for  
the environment,  
*its good for business*

Thank you.

